while in a contoured configuration and under the pulling force of the pull wire, thereby enhancing the steerability and torqueability of the catheter device.

[006] In one representative embodiment, a steerable catheter device comprises a shaft comprising a proximal portion, a distal portion, and a pull-wire lumen that extends at least partially through the proximal and distal portions. A pull wire extends through the pull-wire lumen and has a proximal end portion and a distal end portion, wherein the distal end portion of pull wire is fixed to the distal portion of the shaft. An adjustment mechanism is operatively connected to the proximal end portion of the pull wire and configured to increase and decrease tension in the pull wire to adjust the curvature of the distal portion of the shaft. An axially non-compressible pull-wire sleeve extends co-axially through the pull-wire lumen and over the pull wire.

[007] There is also disclosed a method comprises providing a catheter device having a shaft, a pull wire extending through the shaft, and an axially non-compressible pull-wire sleeve. The pull wire extends at least partially through the pull-wire sleeve, the pull wire and the pull-wire sleeve are radially offset from a central axis of the shaft, and the shaft comprises a proximal portion and a distal portion. The method further comprises inserting the catheter device into the body of a patient and applying tension to the pull wire to adjust the curvature of the distal portion of the shaft.

[008] In another representative embodiment, a steerable catheter device comprises a shaft having a proximal portion and a distal portion, and first and second pull wires. The first and second pull wires have respective proximal portions and respective distal portions. The proximal portions of the first and second pull wires extend through the proximal portion of the shaft in close proximity to each other. The distal end portions of the first and second pull wires extend through the distal portion of the shaft in close proximity to each other over a first distance defining a primary flexing section, diverge away from each other over a second distance, and then extend parallel to each other at angularly spaced locations over a third distance defining a secondary flexing section. Tension applied to the first pull wire and/or the second pull wire is effective to flex the

7. The catheter device of claim 1, wherein the pull-wire sleeve comprises a distal terminal end that is fixed relative to the shaft inside of the pull-wire lumen and a proximal terminal end that is fixed relative to the shaft, and the pull-wire sleeve is unattached to the pull-wire lumen between the distal terminal end and the proximal terminal end.

8. The catheter device of claims 1 or 7, wherein the pull wire extends distally past the pull-wire sleeve into a distal section of the pull-wire lumen not occupied by the pull-wire sleeve.

9. The catheter device of any preceding claim, wherein the shaft comprises a first shaft and the catheter device further comprises a second shaft and another adjustment mechanism configured to adjust the curvature of a distal portion of the second shaft, the first shaft extending co-axially through and distally past the second shaft such that the curvature of the distal portion of the first shaft can be adjusted relative to the second shaft.

10. The catheter device of any preceding claim consisting of only one pull wire.

11. A steerable catheter device, comprising:

a shaft having a proximal portion and a distal portion; and

first and second pull wires having respective proximal portions and respective distal portions, the proximal portions of the first and second pull wires extending through the proximal portion of the shaft in close proximity to each other, and the distal end portions of the first and second pull wires extending through the distal portion of the shaft in close proximity to each other over a first distance defining a primary flexing section, diverging away from each other over a second distance, and then extending parallel to each other at angularly spaced locations over a third distance defining a secondary flexing section;

wherein tension applied to the first pull wire and/or the second pull wire is effective to flex the distal portion away from the central axis of the shaft, wherein the direction of flexion is determined by the relative tensions in the pull wires.

12. The catheter device of claim 11, wherein the shaft comprising a main pull-wire lumen extending through the proximal portion of the shaft and first and second distal pull-wire lumens extending from the main pull-wire lumen, the distal pull-wire lumens diverging away from each other and then extending parallel to each other at

angularly spaced locations toward a distal end of the shaft, the first pull wire extending through the main pull-wire lumen and the first distal pull-wire lumen, and the second pull wire extending through the main pull-wire lumen and the second distal pull-wire lumen.

13. The catheter device of any of claims 11–12, wherein the distal portions of the first and second pull wires are angularly spaced apart from each other at an angle of less than 180 degrees.

14. The catheter device of any of claims 11–13, wherein the distal portions of the first and second pull wires are angularly spaced apart from each other at an angle of about 120 degrees.

15. The catheter device of any of claims 11–14, wherein the range of flexion of the distal portion of the shaft is equal to the angular spacing between the first and second pull wires.

16. The catheter device of any of claims 11–15, wherein the first and second pull wires are configured such that when increased tension is placed on the first pull wire, relative to tension placed on the second pull wire, the curvature of the primary flexing section is adjusted in a first plane and the curvature of the secondary flexing section is adjusted to extend away from the first plane.